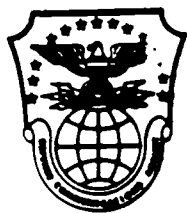


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DEFENSE COMMUNICATIONS AGENCY

UPPER LEVEL PROTOCOL TEST SYSTEM

TEST OPERATORS MANUAL

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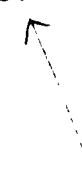
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SECTION 1 - INTRODUCTION

This manual describes the procedure an operator of the protocol test sytem will follow to test the standard high-level protocols via the Man-Machine Interface (MMI) and the Report Generator (RG). The MMI and RG were designed in such a way as to present the operator with a set of menus that will provide a logical flow through test execution and results analysis.

Section 2 describes the procedure to log into the protocol test system. Sections 3 and 4 present the MMI and RG menus.



SECTION 2 - RUNNING A CLIENT'S TESTS

2.1 BUILDING THE CLIENT TEST ENVIRONMENT

Building the client test environment is a system administrator function. Follow these steps to build the test environment required for client testing.

1. Assign a 2 character alphanumeric id to the client.
2. Prefix the client id to the string "test" and the string "rslt" to form two client login name. For example given a client id of xx, the login names would be xxtest and xxrslt.
3. Login as root.
4. Add client logins to `/etc/passwd` using `vipw`.
Assign the login names to the same group number. An example of the two login names in the password file would be:
 xxtest::100:100:Test Client Xray:/usr/users/xxtest:/bin/csh
 xxrslt::101:100:Test Client Xray:/usr/users/xxrslt:/bin/csh
5. Add client group id to file `/etc/group`. Every group name must begin with the prefix `iu`. For example the group name of xxtest and xxrslt might be iuxxtest.
6. Login as xxtest and assign a password to this login name using `passwd`.
7. Login as xxrslt and assign a password to this login name using `passwd`.
8. Login as root.
9. Change directories to `/usr/users/tsl`.

10. Run the shell script **Make-bld-iut**. You will be prompted for the 2 character client id and the group id. (This shell file will build the directories necessary for client testing.)

2.2 RUNNING

To execute tests, the operator logs into the protocol test system as the client **xxtest**. The **xx** is a two character string assigned to the client by the protocol test system manager prior to testing. This will place the operator in the Man-Machine Interface (MMI). The operator will be guided by a series of menus, all with help options, through a test sequence -- choice of protocol, choice of test, examination of results. The protocol test system allows the operator to designate testing sessions so that tests may be run more than one time.

If the operator wishes to view only the results of previous tests, the log in name **xxrslt** should be used. This login blocks execution of tests, but log files may be viewed.

2.3 INSTRUCTIONS

1. Set terminal to VT100 mode.
2. Set terminal to auto wrap around.
3. If **scenarios** will be executed, acquire all client specific information needed to run them.
4. Login to the system with the **xxtest** or **xxrslt** username.
5. Follow the directions as they appear on the MMI or RG menus. See Sections 3 and 4 for a detailed description of the MMI and RG menus.

2.4 DELETING A CLIENTS TEST SESSION

Under certain conditions it is desirable to delete a session from the clients test directory. Deleting test files is a system administrator function. To perform the deletion follow these steps:

1. Login as root.
2. Backup the client directory.
3. Change directory to the correct client directory
`cd /usr/users/xxtest.`
4. Change to the correct protocol subdirectory name
`cd $PROTOCOL/output.` The \$PROTOCOL is the protocol that was being tested when the session was created. For example, if the client was performing tcp testing, the command would be `cd tcp/output.` The choices for \$PROTOCOL are: ip, ipso, tcp, tcp-ip, ftp-user, ftp-server, smtp-sender, smtp-receiver, telnet-user, and telnet-server.
5. Delete the session directory, result log subdirectory, audit trail subdirectory, result log files, and audit trail files. This may all be done with one command `rm -rf $SESSION.` \$SESSION is the name of the session to be deleted. Make sure this is the correct name before performing this command. If done incorrectly you must reload the deleted session from a backup tape.

SECTION 3 - MAN-MACHINE INTERFACE

3.1 OBJECTIVES

The MMI provides test operators with an easily understood menu-oriented interface that allows test execution and results analysis to be performed in a flexible and consistent manner for all protocols supported by the protocol test system. The MMI provides a high-level abstraction of the testing process so that much of the underlying complexity of the process is hidden from potentially naive test operators. The MMI is "user-friendly" so that novice operators very quickly become proficient users of the system.

3.2 METHODS AND PROCEDURES

The MMI unifies the existing protocol test system under the umbrella of a single consistent interface that insulates the operator from the more arduous aspects of the testing process. It determines which processes are needed for each testing sequence, and initiates them at the correct time. It also determines where to look for test results and how to display them. The operator directs the overall course of the testing session by selecting from a menu of available options at every juncture. The operator is able to request a more detailed description of those options at any time.

The MMI hides as many of the underlying system mechanisms as possible so that the operator is in a fully insulated testing environment from the time of log in to the system until log out. Also, the MMI is designed to easily accommodate newly developed test tools.

Figure 3-1 PROTOCOL SELECTION MENU

PROTOCOL SELECTION

- | | |
|----------------------|---------------------------|
| 1. IP | 2. IPSO |
| 3. TCP | 4. TIGHTLY COUPLED TCP/IP |
| 5. USER FTP | 6. SERVER FTP |
| 7. SENDER SMTP | 8. RECEIVER SMTP |
| 9. USER TELNET | 10. SERVER TELNET |
| 11. EXIT TEST SYSTEM | H. HELP |

Enter option number and press "RETURN" >

3.3 PROTOCOL SELECTION MENU

The Protocol Selection Menu shown in Figure 3-1 is displayed after an introduction menu. This menu allows the user to choose which protocol they want to test. For the upper layer protocols FTP, SMTP, and Telnet, the user may choose to test the user or server services. The user may also exit the protocol test system from this menu. As with all MMI menus, a help screen is available for the Protocol Selection Menu.

Figure 3-2 SESSION SELECTION MENU

SESSION SELECTION

- | | |
|-----------------------|----------------------------|
| 1. JOHN | 2. CRAIG |
| 3. LINK | 4. LINK1 |
| 5. JUDY | 6. TRIAL_SESSION |
| 7. CREATE NEW SESSION | 8. RETURN TO PROTOCOL MENU |
| 9. EXIT TEST SYSTEM | H. HELP |

Enter an option number and press "RETURN" >

3.4 SESSION SELECTION MENU

The Session Selection Menu is shown in Figure 3-2. This menu provides the operator with a means of separating test runs into logical sessions. The Session Selection Menu provides the operator with the ability to create new sessions (restricted to privileged operators) or use any of the old sessions listed on the menu. From this menu the operator may also exit the protocol test system or display an help screen. For an unprivileged user the MMI acts as a means to determine the protocol and session for the RG only. The user may not continue to the Task Selection Menu and, therefore, may not execute scenarios. When a valid session is chosen the RG starts automatically. The operator may then perform any of the RG functions (See Section 4). When the operator exits the RG the Session Selection will again be displayed.

Figure 3-3 SESSION SELECTION HELP MENU

| HELP DISPLAY | | page -- 1 |
|-------------------------|--|-----------|
| OPTION | DESCRIPTION | |
| CREATE NEW SESSION | Allows the creation of a new session in which scenarios may be executed. | |
| RETURN TO PROTOCOL MENU | Exits Session Menu, returns to Protocol Menu. | |
| EXIT TEST SYSTEM | Leave the DCA Protocol Laboratory. | |
| Session Number | Choices represent the sessions currently in existence. | |

R H(elp) Enter an option and press "RETURN" >

MAN-MACHINE INTERFACE

3.5 HELP MENUS

Figure 3-3 shows a typical help menu, the help menu for the Session Selection Menu. Because the number of sessions changes the same option may have a varying number associated with it. The options in upper-case letters are the permanent options on this menu. The options in lower-case letters are the varying options on this menu. As always, an "R" will return to the previous display. Other options include "F" to page forward, "B" to page backward, and "H" to display a help menu for the help menu.

Figure 3-4 TASK SELECTION MENU

TASK SELECTION

- | | |
|---------------------------------|----------------------------------|
| 1. EXECUTE SCENARIOS | 2. DISPLAY SCENARIO DIRECTORIES |
| 3. DISPLAY SCENARIO RESULT LOGS | 4. DISPLAY SCENARIO AUDIT TRAILS |
| 5. INVOKE REPORT GENERATOR | 6. RETURN TO SESSION MENU |
| 7. EXIT TEST SYSTEM | H. HELP |

Enter option number and press "RETURN" >

3.6 TASK SELECTION MENU

The Task Selection Menu is shown in Figure 3-4. From this menu the operator chooses the main function they wish to perform. The operator may execute one or more scenarios, display a list of the tests contained within a scenario, display an executed scenarios' result log or audit trail, invoke the RG (See Section 4), return to the Session Selection Menu, exit the protocol test system, or ask for help.

Figure 3-5 SCENARIO EXECUTION SELECTION MENU

SCENARIO EXECUTION SELECTION

- | | |
|-------------------------|-----------------|
| 1. BASIC | 2. OPEN |
| 3. CLOSE | 4. RELIABILITY |
| 5. MULTIPLEX | 6. SECURITY |
| 7. ALLOC | 8. POLICY |
| 9. OUT_OF_BAND | 10. RESET |
| 11. QUAL | 12. EXECUTE ALL |
| 13. RETURN TO TASK MENU | H. HELP |

Enter an option number and press "RETURN" >

3.7 SCENARIO EXECUTION SELECTION MENU

Figure 3-5 shows the Scenario Execution Selection Menu. This menu allows the operator to choose the scenario to execute.

Figure 3-6 ENVIRONMENT SPECIFIC SCENARIO INPUT MENU

ENVIRONMENT-SPECIFIC SCENARIO INPUT

| | |
|--------------------------------|-----------|
| 1. HOSTNAME FOR IUT: | protolabb |
| 2. IUT DRIVER PORT NUMBER: | 2001 |
| 3. HOSTNAME FOR REF: | localhost |
| 4. REF DRIVER PORT NUMBER: | 2002 |
| 5. REF FIRST TEST PORT NUMBER: | 3000 |
| 6. REF INTERNET ADDRESS: | 7.8.0.2 |
| 7. IUT FIRST TEST PORT NUMBER: | 3100 |
| 8. IUT INTERNET ADDRESS: | 7.9.0.2 |

Enter item number to change or "Q" to quit and press "RETURN" >

Figure 3-7 SCENARIO EXECUTION

PROTOCOL TEST RUNTIME INITIALIZATION

```

Enter host name for iut :
Enter port for iut :
You have input:
  host = protolabb
  port = 2001
Is this correct? (y/n) :
Enter host name for ref :
Enter port for ref :
You have input:
  host = localhost
  port = 2002
Is this correct? (y/n) :

To recap:
  protolabb, port 2001 assigned to iut
  localhost, port 2002 assigned to ref
Are these assignments valid? (y/n) :

```

START SCENARIO BASIC

**** START TEST 0

3.8 ENVIRONMENT SPECIFIC SCENARIO INPUT MENU

Each scenario may require different information on which to execute. Figure 3-6 shows a typical Environment Specific Scenario Input Menu. When the operator enters a valid option number the cursor is positioned at the input value field. The operator then enters the correct value. When all values are entered, the operator enters a "Q".

The MMI then performs all processing necessary to execute the scenario. The scenario directs output to the screen, as well as to log files, so that the operator may watch execution as it progresses (See Figure 3-7). When the scenario terminates the MMI performs some more processing and control is returned to the operator at the Scenario Execution Selection Menu.

Figure 3-8 SCENARIO DIRECTORY SELECTION MENU

SCENARIO DIRECTORY SELECTION

- | | |
|-------------------------|-----------------|
| 1. BASIC | 2. OPEN |
| 3. CLOSE | 4. RELIABILITY |
| 5. MULTIPLEX | 6. SECURITY |
| 7. ALLOC | 8. POLICY |
| 9. OUT_OF_BAND | 10. RESET |
| 11. QUAL | 12. DISPLAY ALL |
| 13. RETURN TO TASK MENU | M. HELP |

Enter an option number and press "RETURN" >

Figure 3-9 SCENARIO DIRECTORY DISPLAY

SCENARIO DIRECTORY DISPLAY

page 1

SCENARIO BASIC

- TEST 1
Unspecified Passive Open (PO) Request
- TEST 2
Active Open (AO) Request
- TEST 3
Basic Data Transfer
- TEST 4
Remote Driver (RD) Interpretation of LCN Command
- TEST 5

F P R H(elp) Enter an option and press "RETURN" >

3.9 SCENARIO DIRECTORY SELECTION MENU

Figure 3-8 shows the Scenario Directory Selection Menu. This menu allows the operator to choose to view a description of the tests contained within a given scenario.

Figure 3-9 shows a typical Scenario Directory Display for the TCP BASIC scenario. The operator may choose the "F" (Forward), "B" (Back), "R" (Return), "H" (Help) and "P" (Print) options. The "P" option prints the file the operator is currently viewing.

Figure 3-10 SCENARIO RESULT LOG SELECTION MENU

SCENARIO RESULT LOG SELECTION

- | | |
|---------------|-----------------------|
| 1 INIT1-3 | 2 BASIC1-1 |
| 3 BASIC5-1 | 4 BASIC-8 |
| 5 OPEN-5 | 6 OUT_OF_BAND-1 |
| 7 DISPLAY ALL | 8 RETURN TO TASK MENU |
| H HELP | |

Enter an option number and press "RETURN" >
 (Individual options scenarios may be qualified by result number: "1,1")

Figure 3-11 SCENARIO RESULT LOG DISPLAY

SCENARIO RESULT LOG DISPLAY

page 2

Determines IUT standard send buffer.
 **** END TEST 0

**** START TEST 1
 PURPOSE: TEST THAT IUT CAN DO UNSPECIFIED PASSIVE OPEN
 OK: IUT DID PASSIVE OPEN AND CONNECTION SUCCESSFULLY MADE BY REF
 **** END TEST 1

**** START TEST 2
 PURPOSE: TEST IUT'S ABILITY TO MAKE AN ACTIVE OPEN TO THE REF
 CORRECT: IUT SENDS OPEN SUCCESS RESPONSE TO ACTIVE OPEN
 OK: IUT CORRECTLY PERFORMS ACTIVE OPEN
 **** END TEST 2

**** START TEST 3
 PURPOSE: TEST IUT'S BASIC DATA TRANSFER CAPABILITIES - SEND AND DELIVER

F B P R H(elp) Enter an option and press "RETURN" >

3.10 SCENARIO RESULT LOG SELECTION MENU

Figure 3-10 shows the Scenario Result Log Selection Menu. From this menu the operator chooses which scenario result log they wish to view. Figure 3-11 shows a typical Scenario Result Log Display. Again the options are "F" (Forward), "B" (Back), "P" (Print), "R" (Return), and "H" (Help).

Figure 3-12 SCENARIO AUDIT TRAIL SELECTION MENU

SCENARIO AUDIT TRAIL SELECTION

- | | |
|----------------|------------------------|
| 1. INIT1-3 | 2. BASIC1-1 |
| 3. BASIC5-1 | 4. BASIC-8 |
| 5. OPEN-5 | 6. OUT_OF_BAND-1 |
| 7. DISPLAY ALL | 8. RETURN TO TASK MENU |
| H. HELP | |

Enter an option number and press "RETURN" >
 (Individual options scenarios may be qualified by result number: "/,0")

Figure 3-13 SCENARIO AUDIT TRAIL DISPLAY

SCENARIO AUDIT TRAIL DISPLAY

page 6

```

**** START TEST 2
PURPOSE: TEST IUT'S ABILITY TO MAKE AN ACTIVE OPEN TO THE REF
Issuing D_CMD to ref.2 connection with driver primitive: SET_REPORT
ref.2 ==> (cmd 18)
ref <== ACK
Issuing P_CMD to connection ref.2 with protocol primitive: PSV_OPEN
ref.2 ==> (cmd 3) 3001 0 0 0 0 0 0
ref <== ACK
ref.2 <== OPEN ID 0 3001      END
IUT performs active open
Issuing P_CMD to connection iut.2 with protocol primitive: ACT_OPEN
iut.2 ==> (cmd 1) 3101 3001 7 0.0.2 0 0 0 0 0
iut <== ACK
iut.2 <== OPEN ID 0 3101 3001 7.0.0.2 END
iut.2 <== OPEN SUCCESS 0 END
CORRECT: IUT SENDS OPEN SUCCESS RESPONSE TO ACTIVE OPEN

```

F B P R H(elp) Enter an option and press "RETURN" >

3.10 SCENARIO AUDIT TRAIL SELECTION MENU

Figure 3-12 shows the Scenario Audit Trail Selection Menu. From this menu the operator chooses which scenario audit trail they wish to view. Figure 3-13 shows a typical Scenario Audit Trail Display. Again the options are "F" (Forward), "B" (Back), "P" (Print), "R" (Return), and "H" (Help).

SECTION 4 - REPORT GENERATOR4.1 METHODS AND PROCEDURES

The Report Generator (RG) is a sub-system that is called in its entirety by the MMI. All of the RG output is independent of the MMI. In short, the RG can be interfaced as a stand-alone routine when called by either the MMI or an operator at the operating system level.

Figure 4-1 REPORT GENERATOR INTRODUCTION MENU

```
.....  
: REPORT GENERATOR :  
.....  
  
1. SUMMARY REPORT FOR ALL TESTS  
2. SUMMARY REPORT FOR RUN TESTS ONLY  
3. QUIT  
4. HELP  
  
Enter selection (1-4):   
  
REPORT GENERATOR
```

4.2 SAMPLE SCREENS

The screens indicated below are the example for the TCP testing environment. Other testing environments have the same format.

There are 4 options in the menu shown in Figure 4-1. The procedure of each option shall be mentioned completely in the different sections later.

If entering option:

- No. 1 (see section 4.3, page 4-3)
- No. 2 (see section 4.4, page 4-6)
- No. 3 (exit the Report Generator)
- No. 4 (see Help Screen, page 4-18)

Figure 4-2 SUMMARY REPORT FOR ALL TESTS

| SUMMARY REPORT FOR ALL TESTS | | | | | |
|------------------------------|---|----|------|-----|------|
| TEST | PURPOSE | OK | PROB | INC | #RUN |
| 9 | Fully Specified Passive Open Request | x | | | 1 |
| 10 | Illegal Fully Specified Passive Open Request | | x | | 1 |
| 11 | Active Open with Data | | x | | 1 |
| 12 | Response to Active Open with Data | x | | | 1 |
| 13 | Port Number Range | x | | | 1 |
| 14 | Graceful Closing-complete data transfer after ULP close | | | | 0 |
| 15 | Graceful Closing-data transfer after receipt peer's FIN | | | | 0 |
| 16 | Graceful Closing - peer data transfer after IUT closes | | | | 0 |

F B P D# P# DF PF DR PR E# R H: | | Enter an option, then press "RETURN"

4.3 SUMMARY REPORT FOR ALL TESTS

If the user enters No. 1 in the Report Generator Introduction menu, the following Summary Tables will appear. Each entry in a report will contain the test number, a brief description of the test, an indication of whether the outcome was positive, negative, or inconclusive, and the number of times the test has been executed in the current session.

If the test has not been run, the "#RUN" column will indicate a 0, otherwise, it will indicate a 1. In the event the test is a duplicate because a scenario has been run more than once, the column "#RUN" will contain the number of times the test has been executed.

NOTE: If the run test contains "OBSERVATION" or "PURPOSE" only, then the columns of results such as: "OK", "PROBLEM" and "INC" remain blank. Test 14 as shown in the Summary Table above is an example.

The following keystrokes for the RG are defined and their purposes described.

- F : Forward - The next page of the Summary Report for All Tests will be displayed. This selection is available on all pages except the last page.
- B : Back - The previous page of the report will be displayed. This selection is available on all pages except the first page.
- P : Print - Print the entire Summary Report for All Tests.
- D# : Display - # are user-specified numbers. The user is allowed to select any test number. If the test has not been run, the prompt "Enter an option, then press "RETURN" will be replaced by the error message "Test <#> has not been run yet!". The cursor will then automatically move back to its predetermined position to force the user to reenter another value. If the test has been run, the Specified Test Report will be displayed on the terminal.
- P# : Print - If the input number is valid (test has been run) the entire Specified Test report will print out. If invalid, the error message will be displayed and the user must reenter the correct number.
- DF : Display Failed - This option allows the user to view the All Failed Tests report on the terminal. If there is no failed test, the prompt "Enter an option, then press "RETURN" will be replaced by an error message "There is no failed test, choose another option", after that, the cursor will automatically move to its specified position to force the user to enter another option.

- PF : Print Failed - The entirety of All Failed Tests will be printed. If there are no failed tests, the error message: "There is no failed test, choose another option" will be displayed and the user must enter another option.
- DR : Display Result - Display the purpose and the result of all tests.
- PR : Print Result - The entire Result Log report will be printed.
- E# : Execution selection - "#" is a user selected-test number. If this option is entered and if the test has been run once (the last column "#RUN" of the user-selected test indicates, 1) the error message "Test<#> is not a duplicate" will be displayed and the user must enter another option. If the user-specified test is duplicated (the last column "#RUN" of the user-selected test is greater than 1), the Test Execution report will appear.
- R : Return - Return to the Report Generator Introduction Menu
- H : Help - Help Menu

Figure 4-3 SUMMARY REPORT FOR RUN TESTS ONLY

| SUMMARY REPORT FOR RUN TESTS ONLY | | | | | | |
|-----------------------------------|--|----|------|-----|------|--|
| TEST | PURPOSE | OK | PROB | INC | #RUN | |
| 9 | Fully Specified Passive Open Request | x | | | 1 | |
| 10 | Illegal Fully Specified Passive Open Request | | x | | 1 | |
| 11 | Active Open with Data | | x | | 1 | |
| 12 | Response to Active Open with Data | x | | | 1 | |
| 13 | Port Number Range | x | | | 1 | |
| 38 | Setting Security in Active Open | | x | | 1 | |
| 39 | Setting Security in Passive Open | | x | | 1 | |
| 40 | Setting Security in Fully Specified Passive Open | | x | | 1 | |

P D# P# DF PF DR PR E# R H: ☐ Enter an option, then press "RETURN"

4.4 SUMMARY REPORT FOR RUN TESTS ONLY

Each entry in the Summary Report For Run Tests Only has the same format as the Summary Report for All Tests except it will display the run tests. The "#RUN" column in this table will not be a 0. If the user enters option no.2 in the Report Generator Introduction menu, the following screens will be displayed.

NOTE: If the Summary Table has only one page then the menu command prompts "F" and "B" will be omitted.

Figure 4-4 SUMMARY REPORT HELP MENU

```
Summary Report

F : Move Forward to the next page of the report.
B : Move Backward to the previous page of the report.
P : Print the summary report.
P# : Print the audit trail of the specified test.
PF : Print the audit trails of all failed tests.
PR : Print the result log of all tests.
D# : Display the audit trail of the specified test.
DF : Display the audit trails of all failed tests.
DR : Display the result log of all tests.
E# : Display the test execution report for the specified test.
R : Return to the summary report selection menu.
H : Help.

Enter "R" to return: 

REPORT GENERATOR
```

The Help menu as shown in Figure 4-4 will only return to the Summary Report for All Tests and the Summary Report for Run Tests Only, depending on the menu from which it was called.

Figure 4-5 THE SPECIFIED TEST REPORT

```

The specified test 2 -- page 1

Fri Apr 1 07:22:33 EST 1988
---- Selected execution: 3 out of 3
---- START TEST 2
PURPOSE: TEST IUT'S ABILITY TO MAKE AN ACTIVE OPEN TO THE REF
Issuing D_CMD to ref.2 connection with driver primitive: SET_REPORT
ref.2 ==> (cmd 18)
ref <== ACK
Issuing P_CMD to connection ref.2 with protocol primitive: PSV_OPEN
ref.2 ==> (cmd 3) 3001 0 0 0 0 0 0
ref <== ACK
ref.2 <== OPEN ID 7 3001      END
IUT performs active open
Issuing P_CMD to connection iut.2 with protocol primitive: ACT_OPEN
iut.2 ==> (cmd 1) 3101 3001 7.0.0.2 0 0 0 0 0
iut <== ACK
iut.2 <== OPEN ID 0 3101 3001 7 0.0.2 END

F P R H: ☐ Enter an option

```

NOTE: If the Specified Test report has only one page, the menu command prompts "F" and "B" will be omitted.

If the user enters an invalid key, the prompt "Enter an option", will be replaced by an error message such as "Invalid key, please retype". The cursor will move to its specified position to prompt the user to reenter another option.

- F : Forward - The next page of the Specified Test report will display for continuing.
- B : Back - Display the previous page of the report. This option is available in all the pages except the first page.
- P : Print - Print the entirety of the Specified Test report.
- R : Return - Return to the summary report.
- H : Help - The Help Menu of the Specified Test report will be displayed.

Figure 4-6 ALL FAILED TESTS REPORT

```

                                All failed tests -- page 6

ref.4 <= dir 2 oflow 0 len 0
ref.4 <= TCP HDR: src port 3181 dst port 3882
ref.4 <= TCP HDR: seq 21969891 ack 272387 off 5 flags 18
ref.4 <= TCP HDR: window 8192 checksum 53255 urg_ptr 0
ref.4 <= mtu 0 prec 0 Sec:(type 0 len 0 lev 0 auth 000 )
ref.4 <= win2 8192 rxmtf 8 withackf 0 fillwin 0
ref.4 <= zerof 0 ptr 48888 timestamp 53541418

ref.4 <= ENDRPTS
End Test: Specified Passive Open
**** END TEST 10

Thu Mar 31 09:53:38 EST 1988
**** START TEST 11
PURPOSE: TEST THAT IUT SENDS DATA ON SYN SEGMENT ON ACTIVE OPEN WITH DATA
F B P R H:  Enter an option

```

- F : Forward - Display the next page of this report. This option is available on all the pages except the last page.
- B : Back - Display the previous page of this report. This option is available on all the pages except the first page.
- P : Print - Print the All Failed Tests report.
- R : Return - Return to the summary report.
- H : Help - The Help Menu of the All Failed Tests Report will be displayed.

NOTE: If the All Failed Test report contains only one page then the prompt or input commands (bottom left) will not contain the letters "F" and "B".

If the user enters an invalid key, the prompt of "Enter an option", will be replaced by an error message such as "Invalid key, please retype!". The cursor will move to its specific position to prompt the user to enter a correct option.

Figure 4-7 RESULT LOG REPORT

```

All tests -- page 1

Thu Mar 31 00:53:38 EST 1988
**** START TEST 9
PURPOSE: TEST THAT IUT'S SPECIFIED PASSIVE OPEN CONNECTS TO SPECIFIED PORT
OK: CONNECTION CORRECTLY ESTABLISHED WITH SPECIFIED ADDRESS
**** END TEST 9

Thu Mar 31 00:53:38 EST 1988
**** START TEST 10
PURPOSE: TEST THAT IUT WITH SPEC. PASSIVE CONNECTS ONLY WITH SPECIFIED PORT
PROBLEM: CONNECTION ESTABLISHED WITH UNSPECIFIED SOURCE PORT
**** END TEST 10

Thu Mar 31 00:53:38 EST 1988
**** START TEST 11
PURPOSE: TEST THAT IUT SENDS DATA ON SYN SEGMENT ON ACTIVE OPEN WITH DATA
PROBLEM: IUT DID NOT SEND DATA ON SYN SEGMENT

F P R H:  Enter an option

```

The Result Log Report. If the user enters "DR" in any page of the summary report, the screen in Figure 4-6 will be displayed:

- F : Forward - Display the next page of this report. This option is available on all pages except the last page.
- B : Back - Display the previous page of this report. This option is available on all pages except the first page.
- P : Print - The entire Result Log report will be printed. The prompt on the bottom right of the screen will be replaced by the message: "<pr_log> is printing, enter an option !". The cursor automatically moves to its specified position for the user to enter the new option.
- R : Return - Return to the summary report.
- H : Help - The Help Menu of the Result Log report.

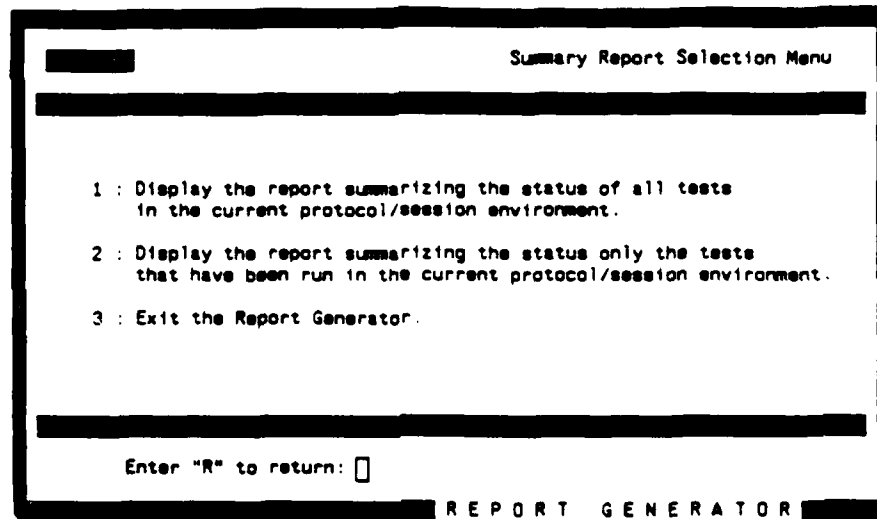
Figure 4-8 TEST EXECUTION REPORT

| TEST EXECUTION REPORT | | | | | |
|-----------------------|---------------|-------------------|----|---------|--------------|
| TEST 2 | | | | | |
| RUN# | DATE AND TIME | | OK | PROBLEM | INCONCLUSIVE |
| 1 | Fri Apr 1 | 07:22:33 EST 1988 | x | | |
| 2 | Fri Apr 1 | 07:22:33 EST 1988 | x | | |
| *3 | Fri Apr 1 | 07:22:33 EST 1988 | x | | |
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- P : Print the entirety of the Test Execution Report.
- S# : Select - The "#" is the user-specified execution number. Allows the selection of the test execution to be reported in the Summary Report. The "*" before the RUN# indicates the currently selected execution. If the user selects a different one via the S# option, the "*" will move to the user-specified execution. For instance, if the user enters option "S5", the prompt on the bottom right of the screen will be replaced by the error message such as "Run <5> has not been run yet". The user must reenter another option. If "S1" is entered, the Test Execution Report will be changed.
- D# : Display - The "#" is the user-specified execution number. The user can select any number from 1 to 4. If the user enters "D3" for instance, the dialog file of the entire scenario which the user selects the specified execution, will be displayed.
- R : Return - Return to the Summary Report. If the user selects a different execution number via the S# option, the Summary Report will report the new results.
- H : Help - Display the Help Menu of the Test Execution report.

- F : Forward - The next page of the report will be displayed.
- B : Back - The previous page of the report will be displayed.
- P# : The entire scenario of the Dialog File which the user-specified at execution time will be printed. When this option is entered, the prompt on the bottom right of the screen will be replaced by a message such as : "<pr_dialog> is printing, Enter an option". The cursor automatically moves back to its specified position for the user to type another option while the report is printing.

Figure 4-9 HELP MENU OF THE REPORT GENERATOR SELECTION MENU



The screenshot shows a terminal window titled "Summary Report Selection Menu". It contains a list of three numbered options: 1: Display the report summarizing the status of all tests in the current protocol/session environment. 2: Display the report summarizing the status only the tests that have been run in the current protocol/session environment. 3: Exit the Report Generator. Below the list is a prompt "Enter 'R' to return: " followed by a small square cursor. At the bottom of the window, the text "REPORT GENERATOR" is displayed.

```
Summary Report Selection Menu

1 : Display the report summarizing the status of all tests
    in the current protocol/session environment.

2 : Display the report summarizing the status only the tests
    that have been run in the current protocol/session environment.

3 : Exit the Report Generator.

Enter "R" to return: ☐

REPORT GENERATOR
```

As with all other Help menus an R will return to the previous menu.

APPENDIX A - TEST SYSTEM REFERENCE DRIVER PORTS

| <u>Protocol</u> | <u>Driver Name</u> | <u>Port</u> |
|----------------------|------------------------|-------------|
| IP | ip_lab_driver | 4000 |
| IPSO | ipso_lab_driver | 2022 |
| TCP | tcp_lab_driver | 2002 |
| TCP/IP | tcp_lab_driver | 2002 |
| SMTP | smtp_lab_driver | 1030 |
| FTP | | |
| (For User testing) | ftp_server_driver | 1201 |
| (For Server testing) | ftp_user_driver | 1204 |
| | | 1203 |
| | | 1202 |
| (For Server testing) | ftp_3way_server_driver | 1205 |
| TELNET | | |
| (For User testing) | telnet_server_driver | 1203 |
| (For Server testing) | telnet_user_driver | 1202 |

APPENDIX B - TEST SYSTEM REMOTE DRIVER PORTS

| <u>Protocol</u> | <u>Port</u> |
|------------------------|-------------|
| TCP | 2001 |
| TCP/IP | 2001 |
| SMTP | 1040 |
| FTP (For User testing) | 1204 |
| TELNET | |
| (For User testing) | 1202 |
| (For Server testing) | 1203 |

APPENDIX C - TEST SYSTEM REFERENCE IMPLEMENTATION PORTS

| <u>Protocol</u> | <u>Port</u> |
|-----------------|-------------|
| SMTP | 1051 |
| FTP | |
| ftp | 1210 |
| ftp3d | 1209 |
| TELNET | |
| tnd | 1211 |